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ABSTRACT

A multi-turn pulse width modulation (PWM) generator for generating a PWM output corresponding to multiple 360 degree turns. A counter receives a reference signal, and counts a
5 number of cycles of the reference signal to generate a binary output corresponding to the number of cycles counted. A frequency divider receives a sensor output signal, and divides the frequency of the sensor output signal by the number of turns in the multiple turns to generate a frequency divided signal.
10 The sensor output signal has substantially the same frequency as the reference signal, but can be offset in phase from the reference signal. A demultiplexer receives the binary output, and generates a plurality of turn indicator signals, each corresponding to one of the multiple turns. A multiplexer
15 receives the turn indicator signals and a mechanical turn indication signal, and selects one of the turn indicator signals that corresponds to the mechanical turn indication signal. At least one flip flop receives the selected one of the turn indicator signals and the frequency divided signal, and generates
20 the PWM output using the selected one of the turn indicator signals and the frequency divided signal. The multi-turn PWM generator may be combined with a single-turn angular position sensor to form a multi-turn angular position sensor.

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